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Jeffrey S Case* (jscase@math.princeton.edu). *A notion of the weighted σ_k -curvature for manifolds with density.*

We propose a natural definition of the weighted σ_k -curvature for a manifold with density; i.e. a triple $(M^n, g, e^{-\phi} \text{dvol})$. This definition is intended to capture the key properties of the σ_k -curvatures in conformal geometry with the role of pointwise conformal changes of the metric replaced by pointwise changes of the measure. We describe some algebraic and analytic properties of the weighted σ_k -curvatures. These results are all analogues of their conformal counterparts, and in the case $k = 1$ recover some of the well-known properties of Perelman's \mathcal{W} -functional. (Received August 26, 2014)